U.S. Application No.: 10/535,157
Amendment B
Reply to Office Action Dated May 16, 2007

Attorney Docket No: 3926.150

REMARKS

Claims 1-7 and 9 were pending in the application at the time of the Final Rejection.

Applicants now incorporate the limitation from claim 3 ("tolerance region") into independent Claim 1, cancel Claim 3, and add new Claim 10 (same as Claim 1 but not requiring sensing objects prior to assigning priority, i.e., pre-programming priority of component regions), to clarify that the inventive method for prioritizing data regions for improving real-time surroundings sensing requires

(a) defining a perception region within the sensed region,

(b) defining within the perception region not only a **lane** but also a **"tolerance region"** **next to the lane,**

(c) further dividing these areas into component regions, and

(d) carrying out data evaluation based on prioritizing of component regions.

Prioritization allows higher interest areas to be processed first or more often. Dividing regions into lane and tolerance regions next to the lane allows a more intelligent analysis based on expected objects to be recognized (e.g., vehicles or obstacles in lane vs. traffic signs or pedestrians next to the lane). Thus, the improvement achieved in accordance with the present invention is multiplied.

As set forth in paragraph [00014] "As a result, objects which are located at the edge of the road, such as road signs, persons, etc. can be sensed within the perception component-regions and thus evaluated specifically with respect to the individual component-regions."

As discussed in paragraph [00016], "For example, traffic signs do not appear within the lane but rather at the edge of the lane." By dividing the perception region into component regions including a lane, where vehicles are expected to be seen but not traffic signs, and a "tolerance region" beside the lane where, e.g., traffic signs are expected to be seen, object recognition techniques such as, edge matching, etc can be carried out to look for signs in the tolerance region rather than in the lane region.

{WP436405;1}

- ·5 -

Applicant appreciates that entry of new independent claim 10 would be at the discretion of the Examiner. Applicant respectfully submits that claim 10 is a variation on claim 1, and that the total number of claims is not increased, since claim 3 has been canceled.

Accordingly, entry and consideration of the amendments is respectfully requested.

Detailed Action

Turning now to the detailed action.

Claim Objection

Claim 1 is objected to in that it is not clear which "evaluation" is being referred to in the last line.

In response, claim 1 has been amended to refer to only one evaluation.

Claim Rejections of Record - 35 U.S.C. § 103

Claims 1-2, 4-6, and 9 remain rejected under 35 USC 103(a) as being unpatentable over Saka et al. (US 6,792,147) in view of Morizane et al. (US 2002/0026274) and Yamada (US 6,369,700).

Claim 3 remain rejected under 35 USC 103(a) as being unpatentable over Saka et al., Morizane et al. and Yamada and further in view of Nishigaki et al. (US 6,775,395).

Claim 7 remain rejected under 35 USC 103(a) as being unpatentable over Saka et al., Morizane et al. and Yamada and further in view of Falbish et al. (EP 0 544 468 A2).

Applicant respectfully traverses in view of the claims as amended to clarify that the inventive method for prioritizing data regions for improving real-time surroundings sensing requires

(a) defining a perception region within the sensed region, and

(b) defining within the perception region not only a **lane** but also a **"tolerance region"** next to the lane,

(c) further dividing these areas into component regions, and

{WP436405;1}

- 6 -

(d) carrying out data evaluation based on prioritizing of component regions.

Saka et al. disclose an object recognition system for recognizing the outline of an object ahead of a vehicle from horizontal and/or vertical edges.

Saka et al. does not combine (a) prioritization (to allow higher interest areas to be processed first or more often), and (b) dividing regions into lane and tolerance regions next to the lane, that is, areas in which different search objects are located, to allow a more intelligent image analysis based on expected objects to be recognized (e.g., vehicles or obstacles in lane vs. traffic signs or pedestrians next to the lane).

The Examiner indicates that, although Applicant argues that the present claims require determining a perception region prior to object detection, this is not set forth in the claims.

In response, Applicant submits that the present claims recite defining perception regions prior to carrying out data evaluation.

New Claim Rejections - 35 U.S.C. § 103

Claims 1 and 2 are rejected over:

Morcom teaching restriction of the region to the volume of travel by the car,

Morizane et al teaching an imaging system for adaptive cruise control, wherein the lane of vehicle travel is recognized, and

Yamada teaching a system for radar obstacle detection wherein the relevant data is restricted to the lane of travel.

Although the reference Morizane et al. discloses a lane recognition process portion (see Fig. 3), it does not disclose restricting the perception region to the lane. Yamada discloses reducing data to be processed by limiting a scanning range of the radar beams to the shape of the lane.

In response, Applicants point out that claim 3 has been incorporated into claim 1 and new claim 10.

{WP436405;1}

- 7 -

U.S. Application No.: 10/535,157
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Next, claim 3 is rejected in view of the above references taken with Nishigaki et al. (US 6,775,395).

More specifically, Nishigaki et al is cited for teaching that **tolerances** are often included in engineering applications.

The Examiner is herein interpreting the term "tolerances" as meaning "fudge factor" – room for acceptable error. This is not the meaning given to this term by applicant.

As discussed in paragraph [00016], "For example, traffic signs do not appear within the lane but rather at the edge of the lane." By dividing the perception region into component regions including a lane, where vehicles are expected to be seen but not traffic signs, and a **"tolerance region"** beside the lane where, e.g., traffic signs are expected to be seen, object recognition techniques such as, edge matching, etc can be carried out to look for signs in the tolerance region rather than in the lane region.

As set forth in paragraph [00014] "As a result, objects which are located at the edge of the road, such as road signs, persons, etc. can be sensed within the perception component-regions and thus evaluated specifically with respect to the individual component-regions."

Thus, the present invention is based on

(a)   prioritization, to allow higher interest areas to be processed first or more often, and

(b)   dividing regions into lane and tolerance regions next to the lane to allow a more intelligent analysis based on expected objects to be recognized (e.g., vehicles or obstacles in lane vs. traffic signs or pedestrians next to the lane).

This is nowhere disclosed or suggested in Nishigaki et al.

Accordingly, withdrawal of the rejection of claim 3, now incorporated into claims 1 and 10, is respectfully requested.

Regarding the rejection of the remaining claims, Applicants respectfully submit that these are allowable by virtue of their dependency from allowable claim 1.
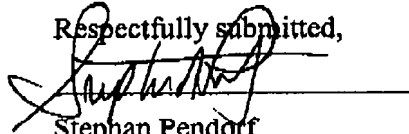
{WP436405;1}

- 8 -

U.S. Application No.: 10/535,157
Amendment B
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Favorable consideration and early issuance of the Notice of Allowance are respectfully requested. **Should further issues remain prior to allowance, the Examiner is respectfully requested to contact the undersigned at the indicated telephone number.**

Respectfully submitted,

Date: October 16, 2007

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{WP436405;1}

- 9 -